

## AUTHORIZATION TO DISCHARGE UNDER THE ARIZONA POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Federal Clean Water Act, (33 USC § 1251 et seq, as amended), and Arizona Administrative Code (A.A.C.) Title 18, Chapter 9, Articles 9 and 10, and amendments thereto,

City of Mesa Northwest Water Reclamation Plant  
P.O. Box 1466  
Mesa, Arizona 85211-1466

is authorized to discharge treated wastewater from the wastewater treatment plant located at 960 North Riverview, Mesa, Arizona 85201, serving the Northern section of the City of Mesa, into the Salt River, at:

Outfall No.	Latitude	Longitude
002	33° 27' 25"	111° 50' 25"
005	33° 29' 05"	111° 44' 48"

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein, and in the attached USEPA Region 9 *Standard Federal NPDES Conditions*, dated July 1, 2001.

This permit shall become effective on May 26th, 2007.

This permit and the authorization to discharge shall expire at midnight, May 25th, 2012.

Signed this 23<sup>rd</sup> day of May, 2007.

For the Regional Administrator

/s/

Alexis Strauss, Director  
Water Division

## PART I. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

- A. The permittee shall monitor discharges from outfalls #002 and #005 as specified in tables 1, 2.a. and 2.b., which follow. Tables 1 and 2.a. specify compliance limits; table 2.b. specifies action levels only (see footnote 1, table 2.b.). These requirements are based on a design capacity of 68,130 m<sup>3</sup>/day (18.0 MGD). If no discharge occurs during a reporting period, monitoring under tables 1, 2.a. and 2.b. is not required for that period. (See part II.B.1. for reporting requirements when no discharge occurs.)

**TABLE 1: Effluent Limitations and Monitoring Requirements**

Parameter	Maximum Allowable Discharge Limitations						Monitoring Requirement (4)	
	Mass Limits (5)			Concentration Limits (5)				
	Average Monthly	Average Weekly	Daily Maximum	Average Monthly	Average Weekly	Daily Maximum	Monitoring Frequency	Sample Type
Flow (MGD)	REPORT (1)	REPORT	REPORT	---	---	---	Continuous	Metered
Biochemical Oxygen Demand (5-day) (BOD)	2044 kg/day	3066 kg/day	---	30 mg/L	45 mg/L	---	Once/week	24-hour Composite (6)
BOD (2)	---	---	---	85% REMOVAL MINIMUM	---	---	Once/week	24-hour Composite
Total Suspended Solids (TSS)	2044 kg/day	3066 kg/day	---	30 mg/l	45 mg/l	---	Once/week	24-hour Composite
TSS (2)	---	---	---	85% REMOVAL MINIMUM	---	---	Once/week	24-hour Composite
<i>Escherichia coli</i> (3) ( <i>E. coli</i> )	---	---	---	126 cfu/100 ml (3)	---	576 cfu/100 ml (3)	Once/week	Discrete
Total Residual Chlorine	0.28 kg/day	---	0.56 kg/day	4.08 ug/l	N/A	8.19	Five times/week	Discrete
pH	Not less than 6.5 standard units nor greater than 9.0 standard units. The discharge shall not cause the pH of the receiving water to change more than 0.5 standard units.						Five times/week	Discrete

**Footnotes:**

- (1) Monitoring and reporting required. No limit set at this time.
- (2) Both the influent and the effluent shall be monitored.
- (3) CFU = colony forming units. The standard is applied as a geometric mean. A minimum of four samples in 30 days is required in order to report a geometric mean. (Results for *E. coli* monitoring may be reported in Most Probable Number (MPN), from Method 9223 B (Standard Methods for the Examination of Water and Wastewater, 18<sup>th</sup> Edition), if an ADHS approved analysis for *E. coli* giving results in CFUs is not available.)
- (4) At a minimum, one sample each quarter must coincide with one of the Whole Effluent Toxicity Test (WET) samples taken each quarter. See Part IV of the permit. See also Part I.D., table 4.
- (5) kg/day = kilogram/day; mg/L = milligram/liter; ug/L = microgram/liter.
- (6) For this permit, each "24-hour composite" sample shall require a minimum of four samples taken six hours apart over a 24-hour period. The four samples taken over 24 hours shall be of equal volumes of not less than 100 ml each. (The contracted analytical laboratory may specify larger volumes.)

- B. Trace Substance Monitoring. The permittee shall monitor discharge from outfalls #002 and #005 as specified in Table 2.a. and 2.b. Data results above the Action Levels listed in Table 2.a. and 2.b. do not constitute a permit violation, but may trigger evaluation of Reasonable Potential (RP) by EPA. The permittee shall use an approved analytical method with a Method Detection Limit (MDL) lower than the Action Level values (when available) consistent with Part II.A.4.

**TABLE 2.a.: Trace Substances Compliance Limitations**  
(All metals limits in table 2.a. are for "total recoverable metal", pursuant to 40 CFR 122.45(c).)

Effluent Characteristic	Action Levels (Maximum Allowable Limits Unless Otherwise Noted)				Monitoring Requirements (1)	
	Mass limits Kilograms/Day (kg/day)	Concentration limits Micrograms/liter (ug/l)				
	Monthly Average	Daily Maximum	Average Monthly Limit (AML)	Maximum Daily Limit (MDL)	Monitoring Frequency	Sample Type
Beryllium	0.30	0.59	4.33	8.69	Monthly	24-hour Composite (2)
Cadmium (3)	0.26	0.53	3.76	7.83	"	"
Chromium (Total as Cr)	6.81	9.94	100	146	"	"
Copper (3)	1.16	2.34	17.1	34.20	"	"
Lead (3)	0.407	0.816	5.97	12	"	"
Mercury	0.01	0.02	0.12	0.37	"	"
Selenium	0.12	0.20	1.75	2.92	"	"
Silver (3)	0.65	1.30	9.47	19.01	"	"
Hardness (CaCO <sub>3</sub> )	NA	NA	Report	Report	"	"
Cyanide	0.54	1.08	7.92	15.90	"	Discrete
Sulfides	3.39	6.80	49.76	99.83	"	24-hour Composite
ORGANICS						
Acrolein	1.15	2.31	16.92	33.94	Monthly	24-hour Composite
Benzidine	4.95	9.94	72.70	145.87	"	"
Benzo(A)pyrene	0.01	0.02	0.2	0.3	"	"
Bis(2-chloroethyl)ether	0.09	0.13	1.3	1.9	"	"
4-Bromophenyl phenyl ether	0.78	1.56	11.44	22.95	"	"
4-chloro-3-methyl phenol	0.26	0.52	3.84	7.70	"	"
3,3-Dichlorobenzidine	0.21	0.31	3.1	4.5	"	"
2,4-Dinitrophenol	0.51	1.03	7.52	15.08	"	"

1,2-Diphenylhydrazine	0.12	0.18	1.8	2.6	"	"
Hexachlorobutadiene	0.46	0.92	6.70	13.44	"	"
Hexachlorocyclopentadiene	0.02	0.03	0.25	0.49	"	"
2-methyl-4,6-dinitrophenol	1.34	2.68	19.60	39.34	"	"
N-nitrosodimethylamine	0.002	0.003	0.03	0.04	"	"
Pentachlorophenol (3)	0.30	0.60	4.36	8.74	Monthly	24-hour Composite
Phenanthrene	0.35	0.70	5.15	10.33	"	"
Polychlorinated biphenyls (PCBs)	0.0014	0.002	0.02	0.03	"	"
2,4,6-Trichlorophenol	1.39	2.79	20.42	40.97	"	"
<b>PESTICIDES</b>						
Endosulfan Sulfate	0.0034	0.007	0.05	0.10	Monthly	24-hour Composite
Endosulfan (Total)	0.0034	0.007	0.05	0.10	"	"

- (1) At a minimum, one sample each quarter must coincide with one of the WET samples taken each quarter. See Part IV.D.5 of the permit. See also Part I.D., table 4.
- (2) For this permit, each "24-hour composite" sample shall require a minimum of four samples taken six hours apart over a 24-hour period. The four samples taken over 24 hours shall be of equal volumes of not less than 100 ml each. (The contracted analytical laboratory may specify larger volumes.)
- (3) Discharge limits based on a hardness of 270.22 mg/l as CaCO<sub>3</sub>. The effluent must be tested for hardness at the same time that these metal samples (and the pentachlorophenol sample) are taken. The hardness data shall be composited from samples drawn concurrently with the metals/pentachlorophenol samples, or from the same samples as drawn for metals/pentachlorophenol.
- (4) N/A = Not Applicable.

**TABLE 2.b.: Trace Substances Action Levels and Monitoring Requirements**

Parameter	ACTION LEVELS (1) (2)				Monitoring Requirements (3)	
	Mass Kilograms/Day (kg/day)		Concentration Micrograms/liter (ug/l)		Monitoring Frequency	Sample Type
	Monthly Avg	Daily Max	Monthly Avg	Daily Max		
Chromium III (2) (4)	7.22	20.84	105.93	305.86	Quarterly	24-hour Composite (5)
Chromium VI (2)	0.38	1.09	5.53	15.97	"	Discrete

- (1) Concentration values for the action levels are calculated based on Arizona Water Quality Standards. Exceedances of these values will trigger an evaluation of reasonable potential and the permit may be reopened and modified to include limitations if necessary. Monitoring and reporting required. Action Levels rather than actual compliance limits are used where RP cannot be calculated using data available to date. An Action Level differs from other permit limits in that an exceedance of an Action Level is not a permit violation. In any event, RP will be re-evaluated based on the collected data before a renewal of this permit could be issued in the future.
- (2) All metals effluent Action Levels are for total recoverable metals, except for Chromium VI, for which the action levels listed are dissolved.

- (3) At a minimum, one sample each quarter must coincide with one of the WET samples taken each quarter. See Part IV.D.5 of the permit. See also Part I.D., table 4.
- (4) Action levels for Chromium III are based on a hardness of 270.22 mg/L as CaCO<sub>3</sub>. Samples for Chromium III shall be drawn concurrently with samples for the metals referenced by footnote 3 in table 2.a. The effluent must be tested for hardness at the same time that these metal samples are taken, using composite samples.
- (5) For this permit, each "24-hour composite" sample shall require a minimum of four samples taken six hours apart over a 24-hour period. The four samples taken over 24 hours shall be of equal volumes of not less than 100 mL each. (The contracted analytical laboratory may specify larger volumes.)

B. After the permittee has obtained a minimum of ten (10) monthly samples for each parameter listed in table 2.a. (or ten quarterly samples for each parameter in table 2.b.), and there are no exceedances of any permit limit (or action level for table 2.b. parameters), the permittee may apply to EPA for a modification to reduce or eliminate further monitoring for one or more of these parameters. Application for this modification may be made by submitting a letter of request, specifying the parameter(s) for which the permittee wishes the monitoring to be modified. The permittee shall include with the request an electronic tabulation of all data accrued to date under tables 2.a. and 2.b., plus a hard copy of the data tabulation. Data shall be included for all parameters monitored under both tables, not just for those for which a monitoring reduction is being requested. (If application is made for a table 2.a. parameter, the data tabulation may include fewer than ten quarterly data points from table 2.b. However, table 2.b. monitoring cannot be modified without ten quarterly data points.) The letter and data tabulation shall be mailed or otherwise delivered to: EPA Region 9, CWA Standards and Permits Office (WTR-5), 75 Hawthorne Street, San Francisco, CA 94105. The permittee shall continue monitoring at the frequency specified in the applicable table until EPA makes a final determination on the request and issues a modified NPDES permit. If the City of Mesa has requested and been granted a request to reduce sampling frequency, pursuant to a similar submittal to the Arizona Department of Environmental Quality (ADEQ), in relation to discharge from this facility to any outfall regulated by the ADEQ, the EPA may at its discretion, reduce the sampling frequency pursuant to this permit to be consistent with the request granted by ADEQ, without requiring the permittee to obtain a minimum of ten (10) monthly samples.

C. The permittee shall monitor the parameters listed in Tables 3.a. - 3.f. once in each of years 2, 3, and 4 of the permit, regardless of whether discharge from a permitted outfall occurs during those years. This monitoring is required for permit renewal by 40 CFR 122.21(j)(4). No limits are established. Permittee shall monitor for these parameters at the same location(s) as described in part I.A. for monitoring under tables 1, 2.a. and 2.b. If the facility does not discharge to a permitted outfall during a designated sampling year, the permittee shall, during that year, collect and analyze a representative sample of effluent for characterization at the point of discharge from the UV disinfection units, or at the point of discharge to an alternate effluent disposal mode (e.g., point of discharge to a reuse program or to recharge basins).<sup>1</sup>

Samples taken under this section shall be representative of seasonal variation in the discharge. One sample under this section should be taken during each of the following time periods: January

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<sup>1</sup> The results of sampling under tables 3.a. - 3.f. will be used at permit renewal to determine whether reasonable potential (RP) exists for any of the listed parameters to be present in the effluent above water quality standards. The next permit renewal will require compliance monitoring for any parameters for which RP is found. Therefore, the alternate sampling location to be used in the event of no discharge to the Salt River should be one at which the effluent quality is the same as that of the intended discharge to the river.

through April; May through August; September through December. (NOTE: Only one sample per year is required. Sampling during these three time periods need not be performed within a single year.) To the extent possible, each sample taken under this section shall be taken concurrently with one of the samples for toxicity testing required under part I.D. and part IV. If more frequent monitoring of any parameters in tables 3.a. - 3.f. is required by another part of this permit, those sampling results may be used to satisfy these requirements provided sampling occurs at the location required in this section. Results shall be submitted with the permit renewal application, at least 180 days prior to the date of permit expiration.

In tables 3.a. through 3.f., each "24-hour composite" sample shall require a minimum of four samples taken six hours apart over a 24-hour period. The four samples taken over 24 hours shall be of equal volumes of not less than 100 mL each. (The contracted analytical laboratory may specify larger volumes.)

**TABLE 3.a: Additional Effluent Testing**

Parameter	Reporting Units	Monitoring Requirements	
		Monitoring Frequency	Sample Type
Temperature	°Celsius	once /year 2,3,4	Discrete
Ammonia (as N)	mg/L	once /year 2,3,4	24-hour Composite
Chlorine (total residual) TRC	mg/L	once /year 2,3,4	Discrete
Dissolved oxygen	mg/L	once /year 2,3,4	Discrete
Kjeldahl Nitrogen, Total	mg/L	once /year 2,3,4	24-hour Composite
Nitrate/Nitrite (as Total N)	mg/L	once /year 2,3,4	24-hour Composite
Oil and grease	mg/L	once /year 2,3,4	Discrete
Phosphorus	mg/L	once /year 2,3,4	24-hour Composite
Total dissolved solids	mg/L	once /year 2,3,4	24-hour Composite

**TABLE 3.b: Expanded Effluent Testing  
Selected Metals (Total Recoverable), and Total Phenols**

All metals analyses except for Chromium VI are for total recoverable, pursuant to 40 CFR 122.45(e). Analysis for Chromium VI shall be for the dissolved fraction.

Parameter	Reporting Units	Monitoring Requirements	
		Monitoring Frequency	Sample Type
Antimony	ug/L	once /year 2,3,4	24-hour Composite
Arsenic	ug/l	once /year 2,3,4	24-hour Composite
Beryllium	ug/L	once /year 2,3,4	24-hour Composite
Boron	ug/L	once /year 2,3,4	24-hour Composite
Cadmium	ug/l	once /year 2,3,4	24-hour Composite
Chromium	ug/l	once /year 2,3,4	24-hour Composite

Chromium III	ug/l	once /year 2,3,4	24-hour Composite
Chromium VI (1)	ug/l	once /year 2,3,4	Discrete
Copper	ug/l	once /year 2,3,4	24-hour Composite
Lead	ug/L	once /year 2,3,4	24-hour Composite
Mercury	ug/l	once /year 2,3,4	24-hour Composite
Nickel	ug/L	once /year 2,3,4	24-hour Composite
Selenium	ug/l	once /year 2,3,4	24-hour Composite
Silver	ug/l	once /year 2,3,4	24-hour Composite
Thallium	ug/l	once /year 2,3,4	24-hour Composite
Zinc	ug/l	once /year 2,3,4	24-hour Composite
Cyanide	ug/l	once /year 2,3,4	Discrete
Total phenolic compounds	ug/L	once /year 2,3,4	Discrete

(1) Analysis for Chromium VI shall be for the dissolved fraction.

**TABLE 3.c: Expanded Effluent Testing- Selected Volatile Organic Compounds**

Parameter	Reporting Units	Monitoring Requirements	
		Monitoring Frequency	Sample Type (1)
Acrolein	ug/L	once /year 2,3,4	24-hour Composite
Acrylonitrile	ug/L	once /year 2,3,4	24-hour Composite
Benzene	ug/L	once /year 2,3,4	24-hour Composite
Bromoform	ug/L	once /year 2,3,4	24-hour Composite
Carbofuran	ug/L	once /year 2,3,4	24-hour Composite
Carbon tetrachloride	ug/L	once /year 2,3,4	24-hour Composite
Chlordane	ug/L	once /year 2,3,4	24-hour Composite
Chlorobenzene	ug/L	once /year 2,3,4	24-hour Composite
Chlorodibromomethane	ug/L	once /year 2,3,4	24-hour Composite
Chloroethane	ug/L	once /year 2,3,4	24-hour Composite
2-chloroethylvinyl ether	ug/L	once /year 2,3,4	24-hour Composite
Chloroform	ug/L	once /year 2,3,4	24-hour Composite
Dichlorobromomethane	ug/L	once /year 2,3,4	24-hour Composite
1,1-dichloroethane	ug/L	once /year 2,3,4	24-hour Composite
1,2-dichloroethane	ug/L	once /year 2,3,4	24-hour Composite
Trans-1,2-dichloroethylene	ug/L	once /year 2,3,4	24-hour Composite
1,1-dichloroethylene	ug/L	once /year 2,3,4	24-hour Composite
1,2-dichloropropane	ug/L	once /year 2,3,4	24-hour Composite
1,3-dichloropropylene	ug/L	once /year 2,3,4	24-hour Composite
Methyl chloride	ug/L	once /year 2,3,4	24-hour Composite

Methylene chloride	ug/L	once /year 2,3,4	24-hour Composite
1,1,2,2-tetrachloroethane	ug/L	once /year 2,3,4	24-hour Composite
Tetrachloroethylene	ug/L	once /year 2,3,4	24-hour Composite
Toluene	ug/L	once /year 2,3,4	24-hour Composite
1,1,1-trichloroethane	ug/L	once /year 2,3,4	24-hour Composite
1,1,2-trichloroethane	ug/L	once /year 2,3,4	24-hour Composite
Trichloroethylene	ug/L	once /year 2,3,4	24-hour Composite
Vinyl chloride	ug/L	once /year 2,3,4	24-hour Composite

(1) Samples for Volatile Organic Compounds must be collected as 4 discrete samples and composited per approved methods by the laboratory running the analyses.

**TABLE 3.d: Expanded Effluent Testing - Selected Acid-extractable Compounds**

Parameter	Reporting Units	Monitoring Requirements	
		Monitoring Frequency	Sample Type
P-chloro-m-cresol	ug/L	once /year 2,3,4	24-hour Composite
2-chlorophenol	ug/L	once /year 2,3,4	24-hour Composite
2,4-dichlorophenol	ug/L	once /year 2,3,4	24-hour Composite
2,4-dimethylphenol	ug/L	once /year 2,3,4	24-hour Composite
4,6-dinitro-o-cresol	ug/L	once /year 2,3,4	24-hour Composite
2,4-dinitrophenol	ug/L	once /year 2,3,4	24-hour Composite
2-nitrophenol	ug/L	once /year 2,3,4	24-hour Composite
4-nitrophenol	ug/L	once /year 2,3,4	24-hour Composite
Pentachlorophenol	ug/L	once /year 2,3,4	24-hour Composite
Phenol	ug/L	once /year 2,3,4	24-hour Composite
2,4,6-trichlorophenol	ug/L	once /year 2,3,4	24-hour Composite

**TABLE 3.e: Expanded Effluent Testing - Selected Base-neutral Compounds**

Parameter	Reporting Units	Monitoring Requirements	
		Monitoring Frequency	Sample Type
Acenaphthene	ug/L	Once/year 2,3,4	24-hour Composite
Acenaphthylene	ug/L	once /year 2,3,4	24-hour Composite
Anthracene	ug/L	once /year 2,3,4	24-hour Composite

Benzidine	ug/L	once /year 2,3,4	24-hour Composite
Benzo(a)anthracene	ug/L	once /year 2,3,4	24-hour Composite
Benzo(a)pyrene	ug/L	once /year 2,3,4	24-hour Composite
3,4 benzofluoranthene	ug/L	once /year 2,3,4	24-hour Composite
Benzo(ghi)perylene	ug/L	once /year 2,3,4	24-hour Composite
Benzo(k)fluoranthene	ug/L	once /year 2,3,4	24-hour Composite
Bis (2-chloroethoxy) methane	ug/L	once /year 2,3,4	24-hour Composite
Bis (2-chloroethyl) ether	ug/L	once /year 2,3,4	24-hour Composite
Bis(2-chloroisopropyl) ether	ug/L	once /year 2,3,4	24-hour Composite
Bis (2-ethylhexyl) phthalate	ug/L	once /year 2,3,4	24-hour Composite
4-bromophenyl phenyl ether	ug/L	once /year 2,3,4	24-hour Composite
Butyl benzyl phthalate	ug/L	once /year 2,3,4	24-hour Composite
2-chloronaphthalene	ug/L	once /year 2,3,4	24-hour Composite
4-chlorophenyl phenyl ether	ug/L	once /year 2,3,4	24-hour Composite

Chrysene	ug/L	once /year 2,3,4	24-hour Composite
Di-n-butyl phthalate	ug/L	once /year 2,3,4	24-hour Composite
Di-n-octyl phthalate	ug/L	once /year 2,3,4	24-hour Composite
Dibenzo(a,h)anthracene	ug/L	once /year 2,3,4	24-hour Composite
1,2-dichlorobenzene	ug/L	once /year 2,3,4	24-hour Composite
1,3-dichlorobenzene	ug/L	once /year 2,3,4	24-hour Composite
1,4-dichlorobenzene	ug/L	once /year 2,3,4	24-hour Composite
3,3-dichlorobenzidine	ug/L	once /year 2,3,4	24-hour Composite
Diethyl phthalate	ug/L	once /year 2,3,4	24-hour Composite
Dimethyl phthalate	ug/L	once /year 2,3,4	24-hour Composite
2,4-dinitrotoluene	ug/L	once /year 2,3,4	24-hour Composite
2,6-dinitrotoluene	ug/L	once /year 2,3,4	24-hour Composite
1,2-diphenylhydrazine	ug/L	once /year 2,3,4	24-hour Composite
Fluoranthene	ug/L	once /year 2,3,4	24-hour Composite
Fluorene	ug/L	once /year 2,3,4	24-hour Composite
Hexachlorobenzene	ug/L	once /year 2,3,4	24-hour Composite
Hexachlorobutadiene	ug/L	once /year 2,3,4	24-hour Composite
Hexachlorocyclopentadiene	ug/L	once /year 2,3,4	24-hour Composite
Hexachloroethane	ug/L	once /year 2,3,4	24-hour Composite
Indeno(1,2,3-cd)pyrene	ug/L	once /year 2,3,4	24-hour Composite
Isophorone	ug/L	once /year 2,3,4	24-hour Composite

Naphthalene	ug/L	once /year 2,3,4	24-hour Composite
Nitrobenzene	ug/L	once /year 2,3,4	24-hour Composite
N-nitrosodi-n-propylamine	ug/L	once /year 2,3,4	24-hour Composite
N-nitrosodimethylamine	ug/L	once /year 2,3,4	24-hour Composite
N-nitrosodiphenylamine	ug/L	once /year 2,3,4	24-hour Composite
Phenanthrene	ug/L	once /year 2,3,4	24-hour Composite
Pyrene	ug/L	once /year 2,3,4	24-hour Composite
1,2,4-trichlorobenzene	ug/L	once /year 2,3,4	24-hour Composite

**TABLE 3.f: Expanded Effluent Testing Based on Designated Uses**

Additional Parameters from the Arizona Surface Water Quality Standards, Appendix A: Tables 1 & 2			
Parameter	Reporting Units	Monitoring Requirements	
		Monitoring Frequency	Sample Type
Alachlor	ug/L	once /year 2,3,4	24-hour Composite
Aldrin	ug/L	once /year 2,3,4	24-hour Composite
Atrazine	ug/L	once /year 2,3,4	24-hour Composite
Carbofuran	ug/L	once /year 2,3,4	24-hour Composite
Chlordane	ug/L	once /year 2,3,4	24-hour Composite
Dalapon	ug/L	once /year 2,3,4	24-hour Composite
4,4-DDD (p,p- Dichlorodiphenyldichloroethane)	ug/L	once /year 2,3,4	24-hour Composite
4,4-DDE (p,p- Dichlorodiphenyldichloroethylene)	ug/L	once /year 2,3,4	24-hour Composite
4,4-DDT ((p,p- Dichlorodiphenyltrichloroethane)	ug/L	once /year 2,3,4	24-hour Composite
1,2-Dibromo-3-chloropropane (DBCP)	ug/L	once /year 2,3,4	24-hour Composite
1,2-Dibromoethane (EDB) Ethylene dibromide	ug/L	once /year 2,3,4	24-hour Composite
2,4-Dichlorophenoxyacetic acid (2,4-D)	ug/L	once /year 2,3,4	24-hour Composite
Dieldrin (HEOD)	ug/L	once /year 2,3,4	24-hour Composite
Di (2-ethylhexyl) adipate	ug/L	once /year 2,3,4	24-hour Composite
Dinoseb	ug/L	once /year 2,3,4	24-hour Composite
Diquat	ug/L	once /year 2,3,4	24-hour Composite
Endothall	ug/L	once /year 2,3,4	24-hour Composite
Endrin	ug/L	once /year 2,3,4	24-hour Composite
Endrin aldehyde	ug/L	once /year 2,3,4	24-hour Composite
Fluoride	ug/L	once /year 2,3,4	24-hour Composite

Glyphosate	ug/L	once /year 2,3,4	24-hour Composite
Heptachlor	ug/L	once /year 2,3,4	24-hour Composite
Heptachlor epoxide	ug/L	once /year 2,3,4	24-hour Composite
Hexachlorocyclohexane - alpha	ug/L	once /year 2,3,4	24-hour Composite
Hexachlorocyclohexane - beta	ug/L	once /year 2,3,4	24-hour Composite
Hexachlorocyclohexane - delta	ug/L	once /year 2,3,4	24-hour Composite
Hexachlorocyclohexane - gamma	ug/L	once /year 2,3,4	24-hour Composite
Methoxychlor	ug/L	once /year 2,3,4	24-hour Composite
Oxamyl	ug/L	once /year 2,3,4	24-hour Composite
Picloram	ug/L	once /year 2,3,4	24-hour Composite
Simazine	ug/L	once /year 2,3,4	24-hour Composite
Sulfides	ug/L	once /year 2,3,4	24-hour Composite

Styrene	ug/L	once /year 2,3,4	24-hour Composite
2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)	ug/L	once /year 2,3,4	24-hour Composite
Toxaphene	ug/L	once /year 2,3,4	24-hour Composite
2-(2,4,5-Trichlorophenoxy) propionic acid (2,4,5-TP) Silvex	ug/L	once /year 2,3,4	24-hour Composite
Trihalomethanes (total)	ug/L	once /year 2,3,4	24-hour Composite
Uranium	ug/L	once /year 2,3,4	24-hour Composite
Xylenes	ug/L	once /year 2,3,4	24-hour Composite

D. The permittee shall monitor for Whole Effluent Toxicity (WET) as specified in table 4 below. If chronic toxicity is detected above an Action Level specified below, the permittee must follow the TIE/TRE processes. See Part IV.E. of the permit.

**TABLE 4: WET Testing**

Effluent Characteristic (1)	Action Levels		Monitoring Requirements	
	Daily Maximum (2) (3)	Monthly Median (3)	Monitoring Frequency	Sample Type
Chronic Toxicity <i>Raphidocelis subcapitata</i> (Green algae) (4)	1.6 TUc	1.0 TUc	Quarterly	24-hr Composite (5)
Chronic Toxicity <i>Pimephales promelas</i> (Fathead minnow)	1.6 TUc	1.0 TUc	Quarterly	24-hr Composite
Chronic Toxicity <i>Ceriodaphnia dubia</i> (Water flea)	1.6 TUc	1.0 TUc	Quarterly	24-hr Composite

**Footnotes:**

(1) See Part IV.E. for additional information on requirements for testing and reporting Whole Effluent Toxicity (WET).

- (2) Since completion of 1 Chronic WET test takes more than 24 hours, the daily maximum of WET is considered to be the highest allowable test result.
- (3) Any exceedance of any one of these values will require follow-up testing by the permittee. See Part IV.E. of the permit for details.
- (4) Also known as *Selenastrum Capricornutum*.
- (5) For this permit, each "24-hour composite" sample shall require a minimum of four samples taken six hours apart over a 24-hour period. The four samples taken over 24 hours shall be of equal volumes of not less than 100 mL each. (The contracted analytical laboratory may specify larger volumes.)

E. Special Considerations for WET Monitoring

1. After the permittee obtains ten or more quarterly samples for chronic toxicity without showing any exceedances of daily maximum or monthly median action levels, the permittee may submit a written request for a permit modification to reduce or otherwise modify the sampling frequency in table 4. The permittee shall include with the letter of request an electronic tabulation of all data accrued under table 4, plus a hard copy of the data tabulation. The request to modify the permit shall be submitted to:

U. S. Environmental Protection Agency, Region 9  
CWA Standards & Permits Office Mailcode: WTR-5  
75 Hawthorne Street  
San Francisco, CA 94105

EPA will evaluate the data to determine if a permit modification is warranted. If the City of Mesa has requested and been granted a request to reduce sampling frequency, pursuant to similar submittal to the Arizona Department of Environmental Quality (ADEQ), in relation to discharge from this facility to any outfall regulated by the ADEQ, the EPA may at its discretion, reduce the sampling frequency pursuant to this permit to be consistent with the request granted by ADEQ, without requiring the permittee to obtain a minimum of ten (10) monthly samples.

2. If no discharge occurs under this permit, the permittee shall nonetheless obtain a minimum of four effluent samples to be analyzed for chronic toxicity, pursuant to 40 CFR 122.21(j)(5)(iv). These samples shall be obtained at the point of discharge from the UV or chlorine disinfection units, or at the point of discharge to an alternate effluent disposal mode (e.g, point of discharge to a reuse program or to recharge basins). Sampling under this section is required in order to provide a basis for calculation of reasonable potential for WET at the next permit renewal. The limits listed in table 4 shall not apply if no discharge occurs. The four tests may be performed either:
  - (a) quarterly during the year preceding the application for renewal, or
  - (b) annually during the four and one-half year period preceding the application for renewal.

F. The discharge shall be free from pollutants in amounts or combinations that:

1. Settle to form bottom deposits that inhibit or prohibit the habitation, growth or propagation of aquatic life;

2. Cause objectionable odor in the area in which the surface water is located;
3. Cause off-flavor in aquatic organisms;
4. Are toxic to humans, animals, plants or other organisms <sup>(1)</sup>;
5. Cause the growth of algae or aquatic plants that inhibit or prohibit the habitation, growth or propagation of other aquatic life or that impair recreational uses;
6. Cause or contribute to a violation of an aquifer water quality standard prescribed in A.A.C. R18-11-405 or A.A.C. R18-11-406; or
7. Change the color of the surface water from natural background levels of color.

(1) Pesticides applied to the effluent for the purpose of mosquito control shall not be considered prohibited under this clause, provided the pesticides are applied in a manner consistent with the July 11, 2003, interim guidance from EPA on the use of pesticides for mosquito control in or over waters of the U.S., until such time as EPA withdraws this guidance. If EPA amends (or finalizes) this guidance, the permittee shall at that point be subject to the provisions of the amended (or finalized) guidance EPA issues on this subject.

- G. The discharge shall be free from oil, grease and other pollutants that float as debris, foam, or scum; or that cause a film or iridescent appearance on the surface of the water; or that cause a deposit on a shoreline, bank or aquatic vegetation.
- H. Samples taken in compliance with the monitoring requirements specified above shall be taken at the following locations:
  1. Influent samples shall be taken after the last addition to the collection system and prior to the first treatment process. (Samples taken after the influent has passed the bar screens and grit removal units, but prior to any other treatment, shall be considered under this clause to have been taken prior to the first treatment process.)
  2. Effluent samples shall be taken downstream from the last treatment process and prior to mixing with the receiving waters.
- I. The discharge shall not cause the pH of the receiving water to change more than 0.5 standard units.
- J. The discharge shall not cause the dissolved oxygen concentration in the receiving water to fall below 3mg/L from 3 hours after sunrise to sunset, or below 1 mg/L from sunset to 3 hours after sunrise, unless the percent saturation of oxygen remains equal to or greater than 90%.

## **PART II. MONITORING AND REPORTING**

### **A. Sample Collection and Analysis**

1. Quality Assurance (QA) Manual

If the facility collects samples or conducts sample analyses in-house, the permittee shall develop a QA Manual to plan and describe the collection and analyses processes and aid in explaining data anomalies if they occur. The permittee shall retain the QA Manual at the permitted facility and make it available for review by ADEQ/ADHS upon request. The permittee shall review the QA Manual annually and revise it when appropriate. The permittee shall document appropriate quality assurance/quality control (QA/QC) procedures in the QA Manual and shall follow the procedures throughout all field sampling and laboratory analyses. As applicable, the QA Manual shall describe the following:

- a. Project Management, including roles and responsibilities of the participants; purpose of sample collection; matrix to be sampled; the analytes or compounds being measured; applicable regulatory or permit-specific limits or action levels; and personnel qualification requirements for collecting samples.
- b. Sample collection procedures; equipment used; the type and number of samples to be collected including QA/QC samples (i.e., background samples, duplicates, and equipment or field blanks); preservatives and holding times for the samples (see 40 CFR Part 136.3).
- c. Approved analytical method(s) to be used; Method Detection Limits (MDLs) and Minimum Levels (MLs) to be reported; required QC results to be reported (e.g., matrix spike recoveries, duplicate relative percent differences, blank contamination, laboratory control sample recoveries, surrogate spike recoveries, etc.) and acceptance criteria; and corrective actions to be taken by the permittee or the laboratory as a result of problems identified during QC checks.
- d. How the permittee will: perform data review; report results to ADEQ; resolve data quality issues; and identify limitations on the use of the data.

2. Sample collection, preservation and handling shall be performed as described in the most recent edition of 40 CFR 136.3 (Table II). Where collection, preservation and handling procedures are not in 40 CFR 136.3, procedures outlined in the 18th edition of *Standard Methods for the Examination of Water and Wastewater* or Standard Operating Procedures (SOPs) developed by ADEQ (when available) shall be used. The permittee shall outline proper procedures in the QA Manual and shall ensure all samples taken to meet the monitoring requirements in this permit conform with the procedures.

3. All samples collected for compliance monitoring must be analyzed using Arizona state approved methods. If no state approved method exists, then the permittee shall ensure an appropriate EPA approved method is used. Except as otherwise specified in this permit, the permittee shall have all samples analyzed by a laboratory licensed by the

Arizona Department of Health Services, Office of Laboratory Licensure and Certification. For results to be considered valid, all analytical work shall meet quality control standards specified in the approved methods.

4. The permittee shall ensure that the laboratory uses an analytical method with a Method Detection Limit (MDL, as defined in Appendix A of this permit) that is lower than the effluent limitations, action levels, or water quality criteria specified in this permit. If all method-specific MDLs are higher than the limits specified in this permit, the permittee shall use the approved analytical method with the lowest method-specific MDL.
- \*5. The permittee shall ensure that the laboratory uses a standard calibration where the lowest standard point is equal to or less than the Minimum Level (ML) as defined in Appendix A. When a method-specific ML is not available under 40 CFR 136, the *interim* ML (see definitions in Appendix A) is to be used for calibration.
6. In accordance with 40 CFR 122.45(c), effluent analyses for all metals, with the exception of chromium VI, shall be measured as "total recoverable metals". Effluent levels in this permit are for total recoverable metals, except for Chromium VI, for which the levels listed are dissolved.

#### **B. Reporting of Monitoring Results**

1. The permittee shall report monitoring results on Discharge Monitoring Report (DMR) forms (EPA No. 3320-1), to the extent that the results reported may be entered on the forms. The permittee shall submit results of all monitoring required by this permit in a format that will allow direct comparison with the limitations and requirements of this permit. If no discharge occurs during the reporting period, the permittee shall specify "No discharge" on the DMR. (Please note, however, the results of additional and expanded effluent monitoring required by Tables 3.a through 3.f, shall be submitted on or with the DMRs regardless of discharge status per Part I, Section C.)

The permittee shall submit DMRs by the 28th day of the month following the end of any given monitoring period. For example, if the monitoring period ends January 31<sup>st</sup>, the permittee shall submit the DMR by February 28. The permittee shall submit original copies of these and all other reports required herein, signed by an authorized representative, to EPA at the following address:

U.S. Environmental Protection Agency, Region 9  
CWA Standards & Permits Office Mailcode: WTR-5  
75 Hawthorne Street  
San Francisco, CA 94105

2. For the purposes of reporting, the permittee shall use the reporting threshold equivalent to the method-specific ML. If there is no method-specific ML promulgated, the laboratory's ML shall be used.

3. For parameters with Daily Maximum Limits or Daily Maximum Action Levels specified in this permit, the permittee shall review the results of all samples collected during the reporting period and report:

For Daily Maximum Values/Action Limits	The Permittee shall Report on the DMR
When the maximum value of any analytical result is greater than the ML (e.g., method-specific ML if one exists, or if not, the laboratory's ML)	The maximum value of all analytical results
When the maximum value detected is greater than or equal to the laboratory's MDL, but less than the ML;	NODI (Q) (1)
When the maximum value is less than the laboratory's MDL.	NODI (B) (2)

5. For parameters with Monthly Average Limits or Monthly Average Action Levels specified in this permit, the permittee shall review the results of all samples collected during the reporting period and report:

For Monthly Average Values/Action Limits		The Permittee shall Report on the DMR
If only 1 sample is collected during the reporting period (monthly, quarterly, annually, etc.)  (In this case, the sample result is the monthly average.)	When the value detected is greater than the ML (e.g., method-specific ML if one exists, or if not, the laboratory's ML)	the analytical result
	When the value detected is greater than or equal to the laboratory's MDL, but less than the ML;	NODI (Q) (1)
	When the value is less than the laboratory's MDL.	NODI (B) (2)
If more than 1 sample is collected during the reporting period	<p>All samples collected in the same calendar month must be averaged.</p> <ul style="list-style-type: none"> <li>When all results are greater than the ML, all values are averaged</li> <li>When calculating monthly averages where some or all samples have non-numeric results, substitute the laboratory's MDL for NODI(Q) and substitute "0" for NODI(B).</li> </ul>	the highest monthly average which occurred during the reporting period

1 NODI (Q) means Not quantifiable

2 NODI(B) means Below Detection

6. The permittee shall attach a report to each DMR that includes the following for all parameters monitored during the reporting period:

- a. The analytical result.
- b. The number or title of the approved analytical method, preparation and analytical procedure utilized by the laboratory, and method-specific MDL or method-specific ML of the analytical method for the pollutant available under 40 CFR 136. When no method-specific ML exists, the laboratory derived ML shall be reported.

- c. The levels at which any results are reported as either *NODI(B)* or *NODI(Q)*.

**C. Twenty-four Hour Reporting of Noncompliance**

When the permittee learns of any noncompliance event that may endanger the environment or human health, the permittee shall, beginning from the time the permittee becomes aware of the noncompliance:

1. report the noncompliance orally within 24 hours, to the EPA Region 9 (WTR-7), at (415) 972-3585; and
2. notify EPA Region 9's CWA Compliance Office Chief (WTR-7) at (415) 972-3505 by phone call or voice mail by 9 a.m. on the next business day; and
3. notify the EPA Region 9's CWA Compliance Office in writing within five days. The permittee shall include in this notification a description of the noncompliance and its cause; the period of noncompliance, including dates and times, and, if the noncompliance has not been corrected, the time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

**D. Monitoring Records**

The permittee shall retain the following monitoring information:

1. Date, exact location and time of sampling or measurements performed, preservatives used;
2. Individual(s) who performed the sampling or measurements;
3. Date(s) the analyses were performed;
4. Laboratory(s) which performed the analyses;
5. Analytical techniques or methods used;
6. Chain of custody forms;
7. Any comments, case narrative or summary of results produced by the laboratory. These comments should identify and discuss QA/QC analyses performed concurrently during sample analyses and should specify whether analyses met project and 40 CFR Part 136 requirements. The summary of results must include information on initial and continuing calibration, surrogate analyses, blanks, duplicates, laboratory control samples, matrix spike and matrix spike duplicate results, sample receipt condition, holding times and preservation.

8. Summary of data interpretation and any corrective action taken by the permittee.
9. Effluent Limitations or Action Levels for analytes/compound being analyzed.

**E. Intermittent Discharge Monitoring**

If the discharge is intermittent rather than continuous, then on the first day of each such intermittent discharge, the permittee shall monitor and record data for all monitoring characteristics listed in tables 1, 2.a., and 2.b., after which the frequencies of analysis listed in these tables shall apply for the duration of each such intermittent discharge. However, for any given parameter, in no event shall the permittee be required to monitor and record data more often than twice the frequency listed in the monitoring requirements.

**F. Monitoring Modification**

EPA may modify the monitoring, analytical, and reporting requirements in this permit upon due notice.

**G. Reporting of Capacity Attainment and Planning**

The permittee shall file a written report to the EPA CWA Standards & Permits Office Water Permits Office (WTR-5), within ninety (90) days after the first time the average daily dry-weather wastewater influent for a calendar month either equals or exceeds 85 percent of the daily dry weather design capacity of the waste treatment and/or disposal facility. The permittee's senior administrative officer shall sign a letter which transmits that report and certifies that the facility's policy-making body is adequately informed about it. The report shall include:

1. Average daily flow for the month, the date(s) on which the instantaneous peak flow occurred, the rate of that peak flow, and the total flow for the day.
2. The permittee's best estimate of when the average daily dry weather flow rate will equal or exceed the design capacity of the facilities.
3. The permittee's intended schedule for the studies, design, and other steps needed to provide additional capacity for the waste treatment and/or disposal facilities before the wastewater flow rate equals the capacity of present facilities.

**PART III. BIOSOLIDS REQUIREMENTS**

Note: "Biosolids" refers to non-hazardous sewage sludge as defined in 40 CFR 503.9 and Arizona Administrative Code (A.A.C.) R18-9-1001(7). Sewage sludge that is hazardous as defined in 40 CFR 261 must be disposed of in accordance with the Resource Conservation and Recovery Act (RCRA). Sludge with PCB (polychlorinated biphenyls) levels greater than 50 mg/kg must be disposed of in accordance with 40 CFR 761.

All biosolids requirements in this permit pertain to biosolids produced at the permitted facility, except where the permit text specifies otherwise.

**A. Use or Disposal Requirements**

All biosolids generated by the permittee shall be used or disposed of in compliance with the applicable portions of 18 A.A.C. Chapter 9, Article 10 and

1. 40 CFR 503 Subpart B: for biosolids that are land applied, for the purpose of enhancing plant growth or for land reclamation.
2. 40 CFR 503 Subpart C: for biosolids that are placed on the land (surface disposal) for the purpose of disposal (dedicated land disposal sites or monofills).
3. 40 CFR 503 Subpart D: for biosolids incinerated outside of Arizona. Note: Incineration of biosolids is prohibited in Arizona.
4. 40 CFR 258: for biosolids disposed of in municipal solid waste landfills; and
5. 40 CFR 257: for all biosolids use and disposal practices not covered under 40 CFR 258 or 503.

**B. Biosolids Preparer's Responsibility**

The permittee is responsible for assuring that all sewage and biosolids produced at its facility are used or disposed of in accordance with 40 CFR 503, 257, 258 and A.A.C 18-9-10 et.seq, as applicable, whether the permittee uses or disposes of the biosolids itself or transfers them to another party for further treatment, use, or disposal. The permittee is responsible for informing subsequent preparers, applicers, and disposers of the requirements that they must meet under the requirements of 40 CFR 503.

**C. Duty to Mitigate**

The permittee shall take all reasonable steps to prevent or minimize any biosolids use or disposal which has a likelihood of adversely affecting human health or the environment.

**D. General Environmental Restrictions**

The permittee shall ensure that:

1. No biosolids enter waters of the United States.
2. Biosolids treatment, storage, use or disposal does not contaminate groundwater.
3. Biosolids treatment, storage, and use or disposal does not create a nuisance such as objectionable odors or attraction of flies or other disease carrying vectors.

4. If biosolids are placed in a surface disposal site (dedicated land disposal site or monofill), a qualified groundwater scientist develops a groundwater monitoring program for the site, or certifies that the placement of biosolids on the site will not contaminate any aquifer. [Note that operators of surface disposal sites for biosolids must obtain an aquifer protection permit in addition to this permit.]

**E. Biosolids Transport**

The permittee shall assure that haulers transporting biosolids off site for treatment, storage, use, or disposal take all necessary measures to keep the biosolids contained.

**F. Biosolids Storage**

1. If biosolids are stored for over two years from the time they are generated, the permittee shall comply with all the requirements for surface disposal under 40 CFR 503 Subpart C, or shall submit a written notification to EPA Region 9 with the information in 40 CFR 503.20 (b), that demonstrates the need for longer temporary storage. A copy of this notification shall be submitted to ADEQ.
2. If biosolids are removed from the permittee's facility, but will be stored for less than two years from the time they are generated, the permittee shall submit information to EPA Region 9 and ADEQ on the storage location and date of final use or disposal.

**G. Surface Water Protection**

The permittee shall ensure all treatment, disposal, or storage sites that receive its biosolids are designed and operated to: divert surface runoff from adjacent areas; protect the site boundaries from erosion; and prevent any drainage that has contacted biosolids from escaping the site. These features shall be designed to be protective for a 100-year storm event.

**H. Facilities with Pretreatment Programs**

If a permittee is required to have a pretreatment program, it shall design local limits to achieve the metals concentration limits in Table 3 of 40 CFR 503.13.

**I. Inspection and Entry**

The permittee shall allow authorized representatives of the EPA or ADEQ, directly or through contractual arrangements with their biosolids management contractors, to:

1. Enter upon all premises where biosolids produced by the permittee are treated, stored, used, or disposed, either by the permittee or by another party to whom the permittee transfers the biosolids for treatment, storage, use, or disposal;

2. Have access to and copy any records that must be kept under the conditions of this permit or of 40 CFR 503, by the permittee or by another party to whom the permittee transfers the biosolids for further treatment, storage, use, or disposal; and
3. Inspect any facilities, equipment (including monitoring and control equipment), practices, or operations used in the biosolids treatment, storage, use, or disposal by the permittee or by another party to whom the permittee transfers the biosolids for treatment, use, or disposal.

**J. Biosolids Monitoring**

Monitoring shall be conducted as follows:

**1. Metals Testing**

Biosolids shall be tested for the metals required in 40 CFR 503.13 (for land application) or 40 CFR 503.23 (for surface disposal), at the following minimum frequencies:

Volume Generated	Monitoring Frequency
0-290 dry metric tons	Once per year
290-1500 dry metric tons	Once per quarter
1500-15,000 dry metric tons	Once per 60 days
over 15,000 dry metric tons	Once per month

**2. Nitrogen Testing**

The permittee shall ensure that biosolids to be land applied are tested for organic-N, ammonium-N, and nitrate-N at the frequencies indicated above.

**3. Test Methods**

The permittee shall ensure biosolids are tested using the methods in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (SW-846, Third Edition, Update 3), as required in 40 CFR 503.8(b)(4).

**4. Testing Accumulated Biosolids.**

If the permittee has accumulated biosolids that have not previously been tested, the permittee must develop a sludge sampling plan which details the number of samples to be taken and the location of sampling points to enable representative samples to be collected. The permittee must collect and analyze representative samples per the sampling plan.

**5. Sampling Results**

Test results for all sludge sampling shall be expressed in milligram of pollutant per kilogram (mg/kg) of biosolids on a 100% dry weight basis.

**6. Pathogen Reduction.**

- a. Prior to land application, the permittee shall document the methods used to demonstrate that the biosolids meet Class A or Class B pathogen reduction levels by one of the methods listed in 40 CFR 503.32.
- b. Prior to disposal in a surface disposal site, the permittee shall demonstrate that the biosolids meet Class B levels or shall ensure that the site is covered at the end of each operating day.
- c. If pathogen reduction is demonstrated using a Process to Significantly/Further Reduce Pathogens, the permittee shall maintain daily records of the operating parameters used to achieve this reduction. If pathogen reduction is demonstrated by testing for fecal coliforms and/or pathogens, samples must be drawn at the frequency in Part III.J.1. of the permit. For fecal coliform, at least seven discrete samples must be drawn during each monitoring event and a geometric mean calculated from these seven samples.
- d. Biosolids must meet Class A or B pathogen reduction at the time they leave the plant site, unless a) they are being transported to a municipal landfill, b) they are being transported to a preparer who has submitted a 2S permit application to ADEQ and EPA, or c) they are being transported to a surface disposal site which has submitted a 2S permit application form to ADEQ and EPA.

**7. Vector Reduction Records**

For biosolids that are land applied or placed in a surface disposal site, the permittee shall ensure that the biosolids meet and retain records of the operational parameters used to achieve Vector Attraction Reduction requirements in 40 CFR 503.33(b).

**8. Additional Sampling for Class 1 Biosolids/Sludge Management Facilities**

Facilities with pretreatment programs or others designated as Class 1 Biosolids/Sludge Management facilities by EPA or ADEQ shall sample biosolids at least annually for all pollutants listed under Section 307(a) of the Act (or at the frequency required in the pretreatment section of the permit for POTWs with pretreatment programs). Class 1 Biosolids/Sludge Management facilities shall also test the biosolids for dioxins/dibenzofurans using a detection limit of less than 1 pg/g at the time of their next priority pollutant scan if they have not done so within the past 5 years, and once every 5 years thereafter.

**9. Testing for Hazardous Waste Determination**

All permittees shall test generated biosolids at least annually, and more frequently as necessary, to determine if biosolids are hazardous in accordance with 40 CFR 261.

**10. Other Testing for Disposal in a Landfill**

Biosolids placed in a municipal landfill shall be tested by the Paint Filter Test (method 9095) at the frequency in Part III.J.1. above or more often as necessary to demonstrate that there are no free liquids.

**K. Notification Requirements**

The permittee, either directly or through contractual arrangements with their biosolids management contractors, shall comply with the following:

**1. Notification of Non-compliance.**

- a. The permittee shall notify EPA Region 9 and ADEQ of any non-compliance with this permit or with the federal biosolids regulations, which may endanger health or the environment. Information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances.
- b. For other instances of non-compliance with the biosolids provisions, the permittee shall notify EPA Region 9 and the ADEQ in writing within five working days of becoming aware of the circumstances.
- c. Permittees shall require their biosolids management contractors to notify EPA Region 9 and the ADEQ of any non-compliance within the same time-frames.

**2. Notification of shipment to another state**

If biosolids are shipped to another State or to Indian Lands, the permittee must send 60 days prior notice of the shipment to the EPA Region 9 Biosolids Coordinator, and to the permitting authorities in the receiving State or Indian Land (the EPA Regional Office for that area and the State/Indian authorities).

**3. Notification of land application**

Prior to application of any biosolids from this facility on a new or previously unreported site, the permittee shall notify EPA Region 9 and the ADEQ Biosolids Coordinator. The notification shall include a description and topographic map of the proposed site(s), slope of land surface, names and addresses of the applier and site owner, and a listing of any state or local permits which must be obtained. The plan shall include a description of the crops or vegetation to be grown, proposed loading rates and determination of agronomic rates. Additionally, if biosolids are to be land applied in Arizona, applicators

must complete and submit to the ADEQ Biosolids Coordinator, a Request for Registration form per A.A.C. R18-9-1004.

**4. Additional notice for land application of biosolids with high metals**

If any biosolids within a given monitoring period do not meet 40 CFR 503.13 Table 3 metals concentration limits, the permittee (or its contractor) must pre-notify EPA Region 9 and the ADEQ Biosolids Coordinator, and determine the cumulative metals loading at that site to date, as required in 40 CFR 503.12.

**5. Permittee's notice to contractors who land apply sludge**

The permittee shall notify the applier of all the applier's requirements under 40 CFR Part 503, including the requirement that the applier certify that management practices, site restrictions, and any applicable vector attraction reduction requirements have been met. For Class B biosolids, the permittee shall require the applier to certify at the end of 38 months following application that the 38 months harvesting restrictions have been met.

**6. Notice of surface disposal**

Prior to disposal in a new or previously unreported site, the permittee shall notify EPA and ADEQ. The notice shall include:

- a. a description and a topographic map of the proposed site,
- b. information on the depth to groundwater and whether the site is lined or unlined,
- c. the names of the site operator and site owner,
- d. whether any state or local permits are necessary and have been obtained,
- e. a description of procedures for ensuring public access and grazing restrictions until three years following site closure, and
- f. a groundwater monitoring plan or description of why groundwater monitoring is not required.

**7. Notification of change in disposal practices**

The permittee shall advise the EPA Region 9 Biosolids Coordinator and the ADEQ Biosolids Coordinator in writing at least 15 days before the facility's current practices for use or disposal of biosolids change.

**L. Annual Report for All Permittees**

The permittee shall submit an annual biosolids report to the EPA Region 9 Biosolids Coordinator and the ADEQ Biosolids Coordinator by February 19 of each year for the period covering the previous calendar year. The report shall include:

1. The amount of biosolids generated that year, in dry metric tons, and the amount accumulated from previous years,
2. Results of all pollutant monitoring required in Part III.J of the permit. Results shall be reported on a 100% dry weight basis.
3. Descriptions of pathogen reduction methods and vector attraction reduction methods, as required in 40 CFR 503.17, 40 CFR 503.27, and certifications.
4. Names, mailing addresses, and street addresses of all persons who received biosolids for storage, further treatment, disposal in a municipal waste landfill, or for other use or disposal methods not covered above, and the volumes delivered to each.
5. For land application sites, the following information shall be submitted by the permittee, unless the permittee requires its biosolids management contractors to report this information directly to the EPA and/or ADEQ:
  - a. Locations of land application sites (with field names and numbers) used that calendar year, size of each field applied to, applicator, and site owner;
  - b. Volumes applied to each field (in wet tons and dry metric tons), nitrogen applied, calculated plant available nitrogen;
  - c. Crop planted, date of planting, harvesting;
  - d. For any biosolids exceeding 40 CFR 503.13 Table 3 metals concentrations, the locations of sites where applied and cumulative metals loading at that site to date;
  - e. Certifications of management practices in 40 CFR 503.14; and
  - f. Certifications of site restrictions in 40 CFR 503.32(b)(5).
6. For surface disposal sites, the following information must be submitted by the permittee, unless the permittee requires its biosolids management contractors to report this information directly to the EPA and/or ADEQ:
  - a. Locations of sites, site operator, site owner, size of parcel on which disposed;
  - b. Results of any required groundwater monitoring;
  - c. Certifications of management practices in 40 CFR 503.24; and

- d. For closed sites, date of site closure and certifications of management practices for the three years following site closure.

**M. Reporting Locations**

1. Reports and Notifications required by Part III of this permit shall be submitted to both of the following addresses:

Regional Biosolids Coordinator  
US EPA Region 9 (WTR-7)  
75 Hawthorne St.  
San Francisco, CA 94105-3901  
415-972-3578

Biosolids Coordinator  
ADEQ  
Water Quality Compliance Section (5415B-1)  
1110 W. Washington St.  
Phoenix, AZ 85007  
602-771-4612

2. Additionally, if the permittee has sent biosolids to a landfill for disposal during the reporting year, a copy of the annual report shall be sent to:

Regional Biosolids Coordinator  
US EPA Region 9 (WTR-7)  
Hawthorne St.  
San Francisco, CA 94105-3901

**PART IV. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS**

**A. General Conditions**

1. The permittee shall conduct chronic toxicity tests on 24-hour composite samples of the final effluent, according to the terms listed in table 4 in part I.D and in this section. Samples shall be taken at the sampling point(s) identified in Part I.A. for tables 1, 2.a., and 2.b. sampling. Three composite samples are required to complete one chronic WET test. Chemical testing for the parameters listed in Part A, Tables 1, 2.a., and 2.b. of this permit shall be performed on a split of at least one of the three composite samples taken for each WET test performed.
2. Definitions related to toxicity are found in Appendix A.

**B. Chronic Toxicity**

1. Chronic toxicity testing evaluates reduced growth/reproduction at 100 percent effluent. Chronic toxicity is to be reported based on the No Observed Effect Concentration (NOEC).
2. The permittee shall report results in Chronic Toxicity Units (TUC). A TUC = 100/NOEC.

3. The chronic toxicity trigger is any one test result greater than 1.6 TUC or any calculated median value greater than 1.0 TUC. If chronic toxicity is detected above these values, follow-up testing is required per Part IV, Section E.

**C. Test Species & Test Methods**

1. The permittee shall conduct short-term tests with the water flea, *Ceriodaphnia dubia* (survival and reproduction test), the fathead minnow, *Pimephales promelas* (larval survival and growth test) and the green alga, *Raphidocelis subcapitata* (growth test).
2. The presence of chronic toxicity shall be estimated as specified by the methods listed in the most recent edition of 40 CFR Part 136.3 (Table IA).
3. Effluent grab samples are to be put on ice immediately after being pulled and kept chilled (but not frozen) to less than 4 deg C throughout collection, shipping, and storage until they are delivered to the testing laboratory.

**D. Quality Assurance:**

1. The NOEC method requires that a series of five dilutions and a control be tested (i.e., 12.5, 25, 50, 75, 100 percent effluent and a control.)
2. If organisms are not cultured in-house, the permittee shall conduct concurrent testing with reference toxicants. Where organisms are cultured in-house, monthly reference toxicity testing is sufficient. The permittee shall also conduct reference toxicant testing using the same test conditions as the effluent toxicity tests (i.e., same test duration, etc.).
3. If either the reference toxicant test or the effluent test do not meet all test acceptability criteria as specified in the 40 CFR Part 136.3 approved method, then the permittee must re-sample and re-test within 14 days. The re-sampling and re-testing requirements include laboratory induced error in performing the test method. The permittee shall conduct reference toxicant tests using the same test conditions as the effluent toxicity test (i.e., same test duration, etc.)
4. The reference toxicant and effluent tests must meet the upper and lower bounds on test sensitivity as determined by calculating the percent minimum significant difference (PMSD) for each test result. The test sensitivity bound is specified for each test method (see variability document EPA/833-R-00-003, Table 3-6). There are five possible outcomes based on the PMSD result.
  - a. *Unqualified Pass*- The test's PMSD is within bounds and there is no significant difference between the means for the control and the effluent. The regulatory authority would conclude that there is no toxicity.
  - b. *Unqualified Fail*- The test's PMSD is larger than the lower bound (but not greater than the upper bound) in Table 3-6 and there is a significant difference

between the means for the control and the effluent. The regulatory authority would conclude that there is toxicity.

- c. *Lacks Test Sensitivity*- The test's PMSD exceeds the upper bound in Table 3-6 and there is no significant difference between the means for the control and the effluent. The test is considered invalid. An effluent sample must be collected and another toxicity test must be conducted within 14 days.
  - d. *Lacks Test Sensitivity*- The test's PMSD exceeds the upper bound in Table 3-6 and there is a significant difference between the means for the control and the effluent. The test is considered valid. The regulatory authority will conclude that there is toxicity.
  - e. *Very Small but Significant Difference*- The relative difference between the means for the control and effluent is smaller than the lower bound in Table 3-6 and this difference is statistically significant. The test is acceptable and the NOEC should be determined.
5. Control and dilution water should be receiving water or lab water as appropriate, as described in the 40 CFR Part 136.3 approved method. If the dilution water used is different from the culture water, a second control, using culture water shall also be used.

**E. Toxicity Identification Evaluation (TIE)/Toxicity Reduction Evaluation (TRE) Processes**

1. If chronic toxicity is detected above a trigger level (either a daily maximum or a monthly median, for any one test species) specified in Table 4 and Part IV, Section B.3 and the source of toxicity is known (for instance, a temporary plant upset), then the permittee shall conduct one follow-up test within two weeks of receipt of the sample results that exceeded the trigger. The permittee shall use the same test and species as the failed toxicity test. If toxicity is detected in the follow-up, then the EPA may modify this permit according to the requirements set forth at 40 CFR Parts 122 and 124, to include appropriate conditions or limits to address demonstrated effluent toxicity.
2. If chronic toxicity is detected above a level specified in Table 4 and Part IV, Section B.3 and the source of toxicity is unknown, the permittee shall begin additional toxicity monitoring within two weeks of receipt of the sample results that exceeded the trigger. The permittee shall conduct four more tests, one approximately every other week, over an eight week period using the same test and species as the failed toxicity test. For intermittent discharges, testing shall be conducted on the next four discharge events using the same test and species as the failed toxicity test.
  - a. If none of the four tests indicates toxicity, then the permittee may return to the routine WET testing frequency specified in this permit.
  - b. If chronic toxicity is detected in any of the additional four tests, the permittee shall immediately begin developing a TRE plan and submit the plan to EPA for review and approval within 30 days after receipt of the toxic result. The

permittee shall use the EPA guidance manual EPA/600/4-89/001A in preparing the TRE plan. The TRE plan shall include, at a minimum, the following:

- (1) Further actions to investigate and identify the causes of toxicity. The permittee may initiate a TIE as part of the TRE process using as guidance EPA manuals, EPA/600/6-91/005F (Phase I); EPA/600/R-92/080 (Phase II), and EPA/600/R-92/081 (Phase III) to identify the causes of toxicity, or as directed by ADEQ.
- (2) Action the permittee will take to mitigate the impact of the discharge and to prevent the recurrence of toxicity; and
- (3) A schedule for implementing these actions.

c. Implement plan as approved and directed by EPA.

#### **F. WET Reporting**

The permittee shall submit the results of the toxicity tests along with the next Discharge Monitoring Report (DMR). If additional toxicity tests are conducted as part of a TRE plan, then a full report, containing (1) the results, (2) the dates of sample collection and initiation of each toxicity test, and (3) the monthly average limit or trigger and daily maximum limit or trigger as described in this permit, shall also be submitted with the DMR for the quarter in which the investigation occurred.

### **PART V. SPECIAL CONDITIONS**

#### **A. Special Discharge Limitation**

1. When flow in the Salt River reaches the edge of the concrete footing beneath the dam at the eastern end of Tempe Town Lake, the permittee shall cease discharge, except as provided in paragraphs V.A.2, V.A.3. and V.A.4. below. Flow in this paragraph means the water in the river from all sources, including but not limited to precipitation, stormwater, wastewater, and agricultural return flows. Flow in this context means water present contiguously throughout the entire length of the receiving segment of the Salt River between the most downstream active outfall of the Mesa NWWRP and the edge of the concrete footing beneath the dam at the eastern end of Tempe Town Lake. The permittee is not required to cease discharge if localized ponding occurs at a location immediately east of the concrete footing beneath the dam, even if the localized ponding is contiguous with the concrete footing. The phrase "localized ponding" in this context means any presence of water which is not contiguous with a currently occurring discharge from the Mesa NWWRP.

2. If a means for diverting or bypassing the Mesa NWWRP effluent around Tempe Town Lake, to a segment of the Salt River below Tempe Town Lake, is developed and appropriately permitted either before or after issuance of this permit, the requirements of part V.A.1. shall not apply to the volume of effluent discharged to this bypass, provided that the effluent that bypasses the lake shall only be discharged into a receiving water for which the designated uses are partial body contact (PBC) and either Aquatic and Wildlife (ephemeral) or Aquatic and Wildlife (effluent dependent water.) This provision applies only to that volume of effluent that is actually bypassed around the lake. The requirement to cease discharge listed in part V.A.1 shall remain applicable to all effluent that is not diverted around the lake through the bypass, subject to the additional provisions of parts V.A.3 and V.A.4.

3. If discharge is occurring from outfall # 002, (though at this time it is not expected to be an active discharge point) or is occurring from outfall #003 (pursuant to ADEQ permit: AZ0024031) when flow in the Salt River reaches the dam at the eastern end of Tempe Town Lake, the permittee may, in lieu of ceasing to discharge or of discharging to a bypass around Tempe Town Lake, choose to discharge only from outfall #005 for discharge to the Granite Reef Underground Storage Project (GRUSP). However, this option is authorized only as long as flow from outfall #005 does not become confluent with flow reaching the footing of the dam.

4. During any period in which the City of Tempe has collapsed the dams at both ends of Tempe Town Lake, the limitations in part V.A.1, V.A.2. and V.A.3. shall not apply. When the dams have been collapsed, The City of Mesa may discharge at 18 MGD directly to the Salt River, from either permitted outfall, subject to all other applicable limitations and requirements of this permit except those in parts V.A.1., V.A.2. and V.A.3.

## **B. Operation**

The permittee shall ensure that the facilities or systems are operated by or under the supervision of an operator currently certified by EPA or ADEQ at the level appropriate for the facility or system.

## **C. Pretreatment Requirements**

1. The permittee shall be responsible and liable for the performance of all Control Authority pretreatment requirements contained in 40 CFR Part 403, including any subsequent regulatory revisions to Part 403. Where Part 403 or subsequent revision places mandatory actions upon the City as Control Authority but does not specify a timetable for completion of the actions, the City shall complete the required actions within six months from the issuance date of this permit or the effective date of the Part 403 revisions, whichever comes later. For violations of pretreatment requirements, the City shall be subject to enforcement actions, penalties, fines and other remedies by the U.S. Environmental Protection Agency (EPA) or other appropriate parties, as provided

in the Act. EPA may initiate enforcement action against a nondomestic user for noncompliance with applicable standards and requirements as provided in the Act.

2. The City shall enforce the requirements promulgated under sections 307(b), 307(c), 307(d) and 402(b) of the Act with timely, appropriate and effective enforcement actions. The City shall cause all nondomestic users subject to federal categorical standards to achieve compliance no later than the date specified in those requirements or, in the case of a new nondomestic user, upon commencement of the discharge.
3. The City shall perform the pretreatment functions as required in 40 CFR Part 403 including, but not limited to:
  - a. Implement the necessary legal authorities as provided in 40 CFR Part 403.8(f)(1);
  - b. Enforce the pretreatment requirements under 40 CFR Part 403.5 and 403.6;
  - c. Implement the programmatic functions as provided in 40 CFR Part 403.8(f)(2); and
  - d. Provide the requisite funding and personnel to implement the pretreatment program as provided in 40 CFR Part 403.8(f)(3).
4. The City shall submit annually a report to EPA, Region 9 and the State describing its pretreatment activities over the previous year. In the event the City is not in compliance with any conditions or requirements of this permit, then the City shall also include the reasons for noncompliance and state how and when the City shall comply with such conditions and requirements. This annual report shall cover operations from January 1 through December 31 and is due on February 28 of each year. The report shall contain, but not be limited to, the following information:
  - a. A summary of analytical results from representative, flow proportioned, 24-hour composite sampling of the POTW's influent and effluent for those pollutants EPA has identified under section 307(a) of the Act which are known or suspected to be discharged by non-domestic users. This will consist of an annual full priority pollutant scan, with quarterly samples analyzed only for those pollutants detected in the full scan. The City is not required to sample and analyze for asbestos. Sludge sampling and analysis are covered in the sludge section of this permit. The City shall also provide any influent or effluent monitoring data for non-priority pollutants which the City believes may be causing or contributing to interference or pass through. Sampling and analysis shall be performed with the techniques prescribed in 40 CFR Part 136;
  - b. A discussion of Upset, Interference or Pass Through incidents, if any, at the treatment plant which the City knows or suspects were caused by non-domestic users of the POTW system. The discussion shall include the reasons why the

incidents occurred, the corrective actions taken and, if known, the name and address of the non-domestic user(s) responsible. The discussion shall also include a review of the applicable pollutant limitations to determine whether any additional limitations, or changes to existing requirements, may be necessary to prevent pass through or interference;

- c. An updated list of the City's significant industrial users (SIUs) including their names and addresses, and a list of deletions, additions and SIU name changes keyed to the previously submitted list. The City shall provide a brief explanation for each change. The list shall identify the SIUs subject to federal categorical standards by specifying which set(s) of standards are applicable to each SIU. The list shall also indicate which SIUs are subject to local limitations;
- d. The City shall characterize the compliance status of each SIU by providing a list or table which includes the following information:
  - (1) Name of the SIU;
  - (2) Category, if subject to federal categorical standards;
  - (3) The type of wastewater treatment or control processes in place;
  - (4) The number of samples taken by the POTW during the year;
  - (5) The number of samples taken by the SIU during the year;
  - (6) For an SIU subject to discharge requirements for total toxic organics, whether all required certifications were provided;
  - (7) A list of the standards violated during the year. Identify whether the violations were for categorical standards or local limits;
  - (8) Whether the facility is in significant noncompliance (SNC) as defined at 40 CFR 403.12(f)(2)(vii) at any time during the year; and
  - (9) A summary of enforcement or other actions taken during the year to return the SIU to compliance. Describe the type of action, final compliance date, and the amount of fines and penalties collected, if any. Describe any proposed actions for bringing the SIU into compliance;
- e. A brief description of any programs the POTW implements to reduce pollutants from nondomestic users that are not classified as SIUs;
- f. A brief description of any significant changes in operating the pretreatment program which differ from the previous year including, but not limited to, changes concerning the program's administrative structure, local limits, monitoring program or monitoring frequencies, legal authority, enforcement policy, funding levels, or staffing levels;

- g. A summary of the annual pretreatment budget, including the cost of pretreatment program functions and equipment purchases; and
- h. A summary of activities to involve and inform the public of the program including a copy of the newspaper notice, if any, required under 40 CFR 403.8(f)(2)(vii).

1. The City shall submit annual SIU compliance status reports to EPA, Region 9 and ADEQ. Each annual report shall cover operations from January 1 through December 31 of the applicable year, and shall be due on February 28 of the following year. Information required for this report may be included as part of the annual report required in part V.C.4., provided the permittee indicates in the report which items are intended to address part V.C.5. (When these requirements are applied for the first time: If this permit is issued on or after October 1 of the year of issuance, the first annual report under this section shall not be due until February 28 following the first full year of the permit.) The reports shall contain:

- a. The name and address of all SIUs which violated any discharge or reporting requirements during that quarter;
- b. A description of the violations including whether any discharge violations were for categorical standards or local limits;
- c. A description of the enforcement or other actions that were taken to remedy the noncompliance; and
- d. The status of active enforcement and other actions taken in response to SIU noncompliance identified in previous reports.

If one or more SIUs are connected to the collection system for the Mesa NWWRP after issuance of this permit, ADEQ shall have the option of requiring the report under part V.C.5 to be submitted quarterly.

5. All reports required in part V.C. shall be submitted to both of the following addresses:

Regional Pretreatment Coordinator  
US EPA Region 9 (WTR-7)  
75 Hawthorne St.  
San Francisco, CA 94105-3901

State Pretreatment Coordinator  
ADEQ  
Water Quality Compliance Section (5415 B-1)  
1110 W. Washington St.  
Phoenix, AZ 85007  
(602) 771 - 4434

**D. Reopener**

This permit may be modified per the provisions of A.A.C. R18-9-B906 and applicable portions of R18-9-A905. This permit may be reopened based on newly available information; to add conditions or limits to address demonstrated effluent toxicity; to implement any EPA-approved new Arizona water quality standard; or to re-evaluate reasonable potential (RP), if Action Levels in this permit are exceeded.

**APPENDIX A**  
**PART A: ACRONYMS**

ADEQ	Arizona Department of Environmental Quality
AZPDES	Arizona Pollutant Discharge Elimination System
CFR	Code of Federal Regulations
CFU	colony forming units
Director	The Director of EPA Region 9 or any authorized representative thereof
DMR	Discharge Monitoring Report
EPA	The U.S. Environmental Protection Agency
kg/day	kilograms per day
MGD	million gallons per day
mg/L	milligrams per Liter, also equal to parts per million (ppm)
NPDES	National Pollutant Discharge Elimination System
pg/g	Picograms/gram
QA	quality assurance
ug/L	micrograms per Liter, also equal to parts per billion (ppb)

**APPENDIX A**  
**PART B: DEFINITIONS**

**ACUTE TOXICITY TEST** is a test used to determine the concentration of effluent or ambient waters that produces an adverse effect (usually death) on a group of test organisms during a short-term exposure (e.g., 24, 48, or 96 hours). Acute toxicity is measured using statistical procedures (e.g., point estimate techniques or a t-test) and is reported in TUAs, where  $TUa = 100/LC_{50}$ .

**ACUTE-to-CHRONIC RATIO (ACR)** is the ratio of the acute toxicity of an effluent or a toxicant to its chronic toxicity. It is used as a factor for estimating chronic toxicity on the basis of acute toxicity data, or for estimating acute toxicity on the basis of chronic toxicity data.

**CHRONIC TOXICITY TEST** is a short-term test in which sublethal effects (e.g., reduced growth or reproduction) are measured in addition to lethality. Chronic toxicity is measured as  $TUc = 100/NOEC$  or  $TUc = 100/ECP$  or  $100/ICp$ . The ICp and ECP value should be the approximate equivalent of the NOEC calculated by hypothesis testing for each test method.

**COMPOSITE SAMPLE** means (in this permit) that each "24-hour composite" sample shall require a minimum of four samples taken six hours apart over a 24-hour period. The four samples taken over 24 hours shall be of equal volumes of not less than 100 ml each. (The contracted analytical laboratory may specify larger volumes.) See footnotes accompanying monitoring tables for any further requirements for composite sampling specific to this permit.

**DAILY MAXIMUM CONCENTRATION LIMIT** means the maximum allowable discharge of a pollutant in a calendar day as measured on any single discrete sample or composite sample.

**DAILY MAXIMUM MASS LIMIT** means the maximum allowable total mass of a pollutant discharged in a calendar day.  
**DISCRETE or GRAB sample** means an individual sample collected from a single location at a specific time, or over a period of time not exceeding 15 minutes. Sample collection, preservation and handling shall be performed as described in the most recent edition of 40 CFR 136.3 (Table II).

**EFFECT CONCENTRATION POINT (ECP)** is a point estimate of the toxicant (or effluent) concentration that would cause an observable adverse effect (e.g., survival or fertilization) in a given percent of the test organisms, calculated from a continuous model (e.g., USEPA Probit Model).

**HYPOTHESIS TESTING** is a statistical technique (e.g., Dunnetts test) that determines what concentration is statistically different from the control. Endpoints determined from hypothesis testing are NOEC and LOEC. The two hypotheses

commonly tested in WET are: Null hypothesis ( $H_0$ ): The effluent is not toxic. Alternative hypothesis ( $H_a$ ): The effluent is toxic.

**INHIBITION CONCENTRATION (IC)** is a point estimate of the toxicant concentration that would cause a given percent reduction in a non-lethal biological measurement (e.g., reproduction or growth) calculated from a continuous model (e.g., USEPA Interpolation Method). IC25 is a point estimate of the toxicant concentration that would cause a 25% reduction in a non-lethal biological measurement.

**LC50** is the toxicant (or effluent) concentration that would cause death in 50 percent of the test organisms.

**METHOD DETECTION LIMIT (MDL)** is the minimum concentration of an analyte that can be detected with 99% confidence that the analyte concentration is greater than zero, as defined by the specific laboratory method listed in 40 CFR part 136. The procedure for determination of a laboratory MDL is in 40 CFR Part 136, Appendix B.

**MINIMUM LEVEL (ML)** is the concentration at which the entire analytical system gives a recognizable signal and acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all of the method-specified sample weights, volumes, and processing steps have been followed (as defined in EPA's draft *National Guidance for the Permitting, Monitoring, and Enforcement of Water Quality-Based Effluent Limitations Set Below Analytical Detection/Quantitative Levels*, March 22, 1994).

**METHOD SPECIFIC ML** is the promulgated method-specific ML contained in 40 CFR Part 136, Appendix A (as "Minimum Levels") and must be used if available.

**INTERIM ML** If a promulgated method-specific ML is not available, then an interim ML must be calculated. The interim ML is equal to 3.18 times the promulgated method-specific MDL rounded to the nearest multiple of 1, 2, 5, 10, 20, 50, etc.

**LABORATORY ML**, is to be calculated when neither an ML or MDL are promulgated under 40 CFR 136. A laboratory ML should be calculated by multiplying the best estimate of detection by a factor of 3.18 and rounding the value to the nearest multiple of 1, 2, 5, 10, 20, 50, etc. When a range of detection is given, the lower end value of the range of detection should be used to calculate the ML.

**MIXING ZONE** is an area where an effluent discharge undergoes initial dilution and may be extended to cover the secondary mixing in the ambient waterbody. A mixing zone is an allocated impact zone where water quality criteria can be exceeded as long as acutely toxic conditions are prevented.

**MONTHLY OR WEEKLY AVERAGE CONCENTRATION LIMIT**, other than for bacteriological testing, means the highest allowable value that shall be obtained by taking the arithmetic mean of consecutive measurements made during calendar month or week, respectively. The "monthly or weekly average concentration limit" for *E. coli* bacteria means the highest allowable value that shall be obtained by taking the geometric mean of 4 measurements made during a calendar month or week, respectively. The geometric mean is the  $n$ th root of the product of  $n$  numbers.

**MONTHLY OR WEEKLY AVERAGE MASS LIMITATION** means the highest allowable value that shall be obtained by taking the total mass discharged during a calendar month or week, respectively, divided by the number of days in the period that the facility was discharging. Where less than daily sampling is required by this permit, the monthly or weekly average value shall be determined by the summation of all the measured discharges by mass divided by the number of days during the month or week, respectively, when the measurements were made.

**NO OBSERVED EFFECT CONCENTRATION (NOEC)** is the highest tested concentration of effluent or toxicant, that causes no observable adverse effect on the test organisms (i.e., the highest concentration of toxicant at which the values for the observed responses are not statistically significant different from the controls).

**POINT ESTIMATE TECHNIQUES** such as Probit, Interpolation Method, Spearman-Kärber are used to determine the effluent concentration at which adverse effects (e.g., fertilization, growth or survival) occurred. For example, concentration at which a 25 percent reduction in fertilization occurred.

**REFERENCE TOXICANT TEST** is a check of the sensitivity of test organisms and the suitability of the test methodology. Reference toxicant data are part of routine QA/QC program to evaluate the performance of laboratory personnel and the robustness and sensitivity of the test organisms. Reference toxicant tests must be conducted concurrently with each effluent test (e.g., the reference toxicant required for the red abalone test method is zinc sulfate).

**SIGNIFICANT DIFFERENCE** is defined as statistically significant difference (e.g., 95% confidence level) in the means of two distributions of sampling results.

**TEST ACCEPTABILITY CRITERIA (TAC)** are specific criteria for determining whether toxicity tests results are acceptable. The effluent and reference toxicant must meet specific criteria as defined in the test method (e.g., for the *Ceriodaphnia dubia* survival and reproduction test, the criteria are: the test must achieve at least 80% survival and an average of 15 young per surviving female in the controls).

**t-TEST** (formally Student's t-Test) is a statistical analysis comparing only two sets of replicate observations- in the case of WET, only two test concentrations (e.g., a control and 100% effluent). The purpose of this test is to determine if the 100% effluent concentration differs from the control (i.e., the test passes or fails).

**TOXICITY TEST** is a procedure to determine the toxicity of a chemical or an effluent using living organisms. A toxicity test measures the degree of effect of a specific chemical or effluent on exposed test organisms..

**TOXIC UNIT ACUTE (TU<sub>a</sub>)** is the reciprocal of the effluent concentration that causes 50 percent of the organisms to die by the end of an acute toxicity test (i.e.,  $TU_a = 100/LC_{50}$ ).

**TOXIC UNIT CHRONIC (TU<sub>c</sub>)** is the reciprocal of the effluent concentration that causes no observable effect on the test organisms by the end of a chronic toxicity test (i.e.,  $TU_c = 100/NOEC$ ).

**TOXIC UNIT (TU)** is a measure of toxicity in an effluent as determined by the acute toxicity units or chronic toxicity units measured. Higher the TUs indicate greater toxicity.

**TOXICITY IDENTIFICATION EVALUATION (TIE)** is a set of procedures used to identify the specific chemical(s) causing effluent toxicity.

**TOXICITY REDUCTION EVALUATION (TRE)** is a site-specific study conducted in a stepwise process designed to identify the causative agents of effluent toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in effluent toxicity.

**WHOLE EFFLUENT TOXICITY** is the total toxic effect of an effluent measured directly with a toxicity test.